WHAT IS CLAIMED IS:

1. A processor-implemented method for designing a ring cover candidate for a network, comprising:

receiving network configuration information and traffic demand information for the network; and

generating the ring cover candidate, including a plurality of rings, based on the network configuration information and the traffic demand information, each of the rings including a plurality of network spans.

2. The processor-implemented method of claim 1, further comprising

generating and outputting at least one report describing characteristics of the ring cover candidate.

3. The processor-implemented method of claim 1, wherein the generating the ring cover candidate comprises creating a spanning tree from a plurality of loaded spans of the network.

4. The processor-implemented method of claim 3, wherein the generating the ring cover candidate further comprises:

adding one or more chords to the spanning tree to create a plurality of first rings;

generating a plurality of second rings by combining two of the plurality of first rings; and

generating a plurality of third rings by combining one of the second rings with one of the first rings.

5. The processor-implemented method of claim 4, wherein the generating a plurality of third rings comprises generating derived third degree rings and focused third degree rings.

6. The processor-implemented method of claim 4, wherein at least some of the third rings and the second rings are based on an invalid first ring.

7. The processor-implemented method of claim 4, further comprising storing information regarding the first rings, the second rings and the third rings in span-linked lists associated with respective ones of a plurality of network spans covered by the first rings, the second rings and the third rings.

8. The processor-implemented method of claim 1, wherein the generating the ring cover candidate comprises generating a plurality of ring cover candidates, the generating the plurality of ring cover candidates comprising:

generating a first ring cover candidate by using cheapest ones of the rings formed on loaded network spans,

generating a second ring cover candidate by using cheapest ones of the rings formed on a maximum number of uncovered network spans, and

generating a third ring cover candidate by using cheapest ones of the rings from the first ring cover candidate.

9. The processor-implemented method of claim 2, wherein the at least one report includes characteristics of each of the rings included in the ring cover candidate.

10. The processor-implemented method of claim 9, wherein the characteristics of each of the rings include a ring identifier, a number of nodes covered by a corresponding one of the rings, and a length of the corresponding one of the rings.

11. The processor-implemented method of claim 2, wherein the at least one report includes information about network spans not covered by any valid ones of the rings of the ring cover candidate.

12. The processor-implemented method of claim 2, wherein the at least one report includes information about network spans not covered by any ones of the rings of the ring cover candidate.

13. The processor-implemented method of claim 2, wherein:

the generating the ring cover candidate includes generating a plurality of ring cover candidates, and

the at least one report provides characteristics of each of the plurality of ring cover candidates.

14. The processor-implemented method of claim 1, wherein:

the generating the ring cover candidate includes generating a plurality of ring cover candidates, and

the method further comprises:

comparing the plurality of the ring cover candidates; and

selecting one of the plurality of ring cover candidates as a recommended ring cover candidate.

15. The processor-implemented method of claim 14, wherein the selecting one of the ring cover candidates comprises selecting one of the ring cover candidates having a highest number of loaded spans.

16. An apparatus for generating at least one ring cover candidate for a network, comprising:

at least one storage device configured to store instructions; and

at least one processor configured to execute the instructions to generate the at least one ring cover candidate based on configuration information and traffic demand information associated with the network.

17. The apparatus of claim 16, wherein the at least one processor is configured to generate a report describing characteristics of the at least one ring cover candidate.

18. The apparatus of claim 16, wherein the at least one processor is configured to generate a plurality of rings for each of the at least one ring cover candidate, the plurality of rings including a plurality of fundamental rings, a plurality of second degree rings, and a plurality of third degree rings.

19. The apparatus of claim 16, wherein the at least one processor is further configured to store each of the rings of the at least one ring cover candidate in span linked lists associated with ones of a plurality of network spans of the network covered by the rings in the at least one storage device.

20. The apparatus of claim 16, wherein the at least one processor is further configured to generate a plurality of ring cover candidates by using a different process to generate each of the ring cover candidates.

21. The apparatus of claim 16, wherein the at least one processor is further configured:

to generate a first ring cover candidate by using shortest ones of the rings formed on loaded network spans,

to generate a second ring cover candidate by using shortest ones of the rings formed on a maximum number of uncovered network spans, and

to generate a third ring cover candidate by using shortest ones of the rings from the first ring cover candidate.

22. The apparatus of claim 16, wherein the at least one processor is further configured to rank each of a plurality of rings included in the at least one ring cover candidate, the rank being based on a measure of a benefit of including a respective ring in the at least one ring cover candidate versus a measure of a cost of including the respective ring in the at least one ring cover candidate.

23. A system for identifying at least one ring cover candidate for a network, comprising:

means for receiving network configuration information and information representing predicted traffic demand for the network;

means for generating a plurality of ring cover candidates, including a plurality of rings, based on the network configuration information and the information representing predicted traffic demand, each of the rings including a plurality of network spans; and

means for comparing the ring cover candidates and selecting one of the ring cover candidates as a recommended ring cover candidate.

24. A machine-readable medium having recorded thereon instructions for at least one processor, the instructions comprising instructions for the at least one processor:

to generate a plurality of ring cover candidates for a network by using a different procedure to select a respective plurality of rings for each of the ring cover candidates, the generation of the ring cover candidates being based on configuration

information and information representing predicted traffic demand associated with the network, each of the rings including a plurality of network spans; and

to compare the ring cover candidates and select one of the ring cover candidates as a recommended ring cover candidate based on the predicted traffic demand of network spans covered by each of the ring cover candidates.

25. The machine-readable medium of claim 24, wherein the machine-readable medium further includes instructions for the at least one processor:

to create a spanning tree based on loaded ones of the network spans,

to generate a plurality of fundamental rings based on the spanning tree, and

to generate a plurality of rings based on the generated fundamental rings.

26. The machine-readable medium of claim 25, wherein the plurality of rings based on the generated fundamental rings include at least one of second degree rings and third degree rings.

27. The machine-readable medium of claim 25, wherein the machine-readable medium further includes instructions for the at least one processor to attempt to create a focused third degree ring to cover a network span when the network span is covered only by an invalid fundamental ring.

28. The machine-readable medium of claim 25, wherein:

the plurality of rings based on the generated fundamental rings are formed by combining a fundamental ring with another of the rings, and

the fundamental ring and the another of the rings have a network span in common.

29. The machine-readable medium of claim 24, wherein the machine-readable medium further includes instructions for the at least one processor to calculate a ranking of each of the rings in at least one of the ring cover candidates, the ranking being based on a benefit gained by including a respective ring in the at least one ring cover candidate versus a measure of a cost incurred by including the respective ring in the at least one ring cover candidate.

30. The machine-readable medium of claim 24, wherein the machine-readable medium further includes instructions for the at least one processor to generate at least one report that describes characteristics of at least one of the ring cover candidates.